



AFCTN Test Report

94-083

AFCTB-ID
94-092



Technical Raster Transfer

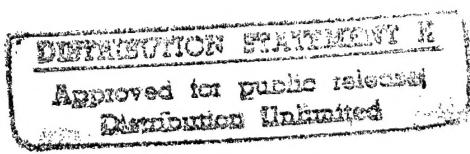
Using:

OC-ALC/TILDOS EDCARS' Data

MIL-R-28002A (Raster)

Quick Short Test Report

24 June 1994



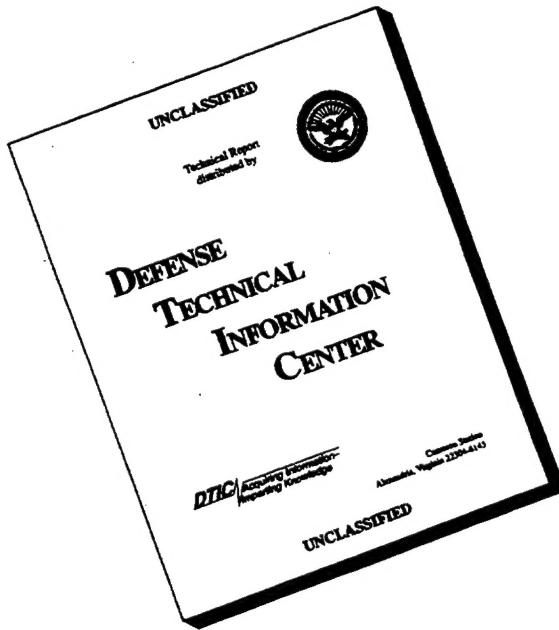
19960822 114



Prepared for
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Air Force CALS Program Office
HQ ESC/AV-2
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Dayton OH 45431-1672

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AFCTN Test Report
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**Technical Raster Transfer
Using:
OC-ALC/TILDOS EDCARS' Data**

**MIL-STD-1840A
MIL-R-28002A (Raster)**

Quick Short Test Report

24 June 1994

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Air Force CALS Test Bed

Notification of Test Results

22 July 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

O'Neil & Associates, Inc.

Identified as follows:

Title:	Technical Publication TO 12R2-2A-1661
Program:	MILSTAR
Program Office:	ESC/MSL
Contract No.:	F19628-89-C-0131
QSTR No.:	AFCTB-ID 94-096

Received on the following media: **9-Track Tape**

The results of the QSTR evaluation are as follows:

MIL-STD-1840A Standard:	Fail
MIL-STD-1840A Media Format:	Fail
MIL-D-28000A IGES:	Fail
MIL-M-28001B SGML:	Fail
MIL-R-28002A Raster:	Pass
MIL-D-28003 CGM:	Pass

Formal results with associated disclaimer are documented and available from the AFCTB.

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1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840A, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze OC-ALC/TILDOS' interpretation and use of the CALS standards in transferring technical Raster data. OC-ALC/TILDOS used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff on two 9-track magnetic tapes.

The stated purpose of the test was to determine the source of errors that prevented the tapes from being read by the EDCARS system.

2. Test Parameters

Test Plan: AFCTB 94-092

Date of Evaluation: 24 June 1994

Evaluator:
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Air Force CALS Test Bed
DET 2 HQ ESC/AV-2P
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

Data Originator:
Lisa F. Maranon
OC-ALC/TILDOS
3001 Staff Dr
Tinker AFB OK 73145-3041
(405) 736-2336
(DSN) 336-2336

Data Description: Technical Raster Test
5 Raster files

Data Source System:
1840
HARDWARE
HP Apollo
SOFTWARE
Auto-trol

Raster
HARDWARE
HP Apollo
SOFTWARE
Auto-trol

Evaluation Tools Used:

MIL-STD-1840A (TAPE)
SUN 3/280

AFCTN Tapetool v1.2.10 UNIX
XSoft CAPS/CALS v40.4
PC 486/50

AFCTN Tapetool v1.2.10 DOS

MIL-R-28002 (Raster)
HP 735

InterCAP X-Change v7.82
SUN SparcStation 2
Carberry CADLeaf Plus v3.1
AFCTN validg4
AFCTN xrastb.sun4
IGES Data Analysis (IDA) IGESView v3.0
PC 486
Inset Systems HiJaak v2.1
Expert Graphics RxHighlight v1.0

Standards
Tested:

MIL-STD-1840A
MIL-R-28002A

3. 1840A Analysis

3.1 External Packaging

The tapes arrived at the Air Force CALS Test Bed (AFCTB) enclosed in a box in accordance with ASTM D 3951. The exterior of the box was not marked with a magnetic tape warning label, as required by MIL-STD-1840A, para. 5.3.1.3.

The tapes were not enclosed in a barrier bag or barrier sheet material as required by MIL-STD-1840A, para. 5.3.1.2. One of the tape's reel was missing the label indicating the recording density, as required by MIL-STD-1840A, para. 5.3.1. Some 9-track tape units require this BPI to be set manually. The packing lists showing all files recorded on the tapes were missing.

3.2 Transmission Envelope

The 9-track tapes received by the AFCTB contained MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

The first tape, marked from Boeing, was run through the AFCTN Tapetool v1.2.10 utility. Eleven notes were reported while evaluating the contents of the tape labels. Four were "Invalid record size encountered" errors, and seven were partial block notes. All of the errors are shown in Appendix A, Section One and Two, of the Tape Import Log.

Four of the notes related to the tape label Record Length field for Type D files. Type D files contain variable length records that do not span blocks. All of the Type D files written on the tape were flagged with an illegal value for Record Length. The D001 file was expected to be Type D according to MIL-STD-1840A. The AFCTN Tapetool Software is expecting a value of 260 in the Record Length field but encountered a record length of 256. MIL-STD-1840A para. 5.2.1.3 requires the variable record size to be a maximum of 256 bytes. ANSI X3.27 para. 7.2.3 further states that the

length of a Record Control Word (RCW) must be included in a Measured Data Unit (MDU) record length computation. This adds four bytes to the 256 for an MDU total of 260 bytes. ANSI X3.27 para. 8.5.2.6 states that the Record Length field for Type D files shall contain the maximum length of an MDU. While MIL-STD-1840A permits variable length records. Some software programs are sensitive to the number 260 because it is used to limit the record size when unblocking data. Some systems need this value to declare the maximum allowable record size as an attribute of a file when it is created.

A note was reported on the tape label version. MIL-STD-1840A permits the use of both version three and four. The use of the most current standard should be used and noted.

The tape was read using XSoft's CAPS *read1840A* utility without any reported errors.

Additional notes were generated on all files for incomplete last block. All fixed length blocks should be padded to the end of the physical block with the "^" character. The note record in the Document Declaration file should have been filled with the space character. Some drive units will not process an incomplete block.

*** NOTE - Last block was incomplete. Short blocks are
prone to be interpreted as noise by some tape drives.
Tape Label => 2048, Actual => 768, Block Number => 37

The physical structure of the first tape meets the requirements defined in MIL-STD-1840A.

When the second tape was read, Tapetool reported the structure was not valid. An attempt was made to read it using the UNIX system. The tape dump command showed that nothing of value was written on the tape. Shown below is the ASCII dump of all the information written on the tape.

ເລືອດCASppupppqpppqppEDr^0^8@F^g@xqw`wsrw`qvpu

The second tape does not meet the requirements defined in MIL-STD-1840A, and no further evaluations were made on this tape.

3.2.2 Declaration and Header Fields

Two errors were found in the Document Declaration file and data file headers. In Document Declaration File D001, an invalid change level was flagged. MIL-STD-1840A, para. 5.1.1.2 shows the change level as "ORIGINAL". The reported value was "NONE". The second error relates to no value being inserted in the dteisu record. This must contain the date written on the tape.

chglvl: NONE
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid change level encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Change level should be the word ORIGINAL or a Revision Number followed by a Change Level Number followed by a Change Level Date. They should be separated by a comma or space.

dteisu: NONE
*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.
*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year followed by a two digit month followed by a two digit day.

Because of the errors in the Document Declaration header file, the tape does not meet the requirements defined in MIL-STD-1840A.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included in this evaluation.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included in this evaluation.

6. Raster Analysis

The first tape contained five Raster files. All files were evaluated using the AFCTN validg4 utility. This program reported all five files meet the CALS MIL-R-28002A specification.

The files were read into the AFCTN xrastb.sun4 viewing utility. No problems were noted.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The Raster files were read into Carberry's CADLeaf software and displayed without a reported error.

The files were read and displayed using IDA's CALSView without a reported error.

The files were read into and displayed using IDA's IGESView and IGESView for Windows without a reported error.

The files were read into Inset Systems' HiJaak for Windows without a reported error. File D001R001 was printed.

The files were read using InterCAP's X-Change without a reported error.

The Raster files were converted using Rosetta Technologies' *Prepare* without a reported error. The resulting files were read into Rosetta Technologies' *Preview*, displayed and printed.

The Raster files were imported into Expert Graphics' *Rx-Highlight* and displayed without a reported error. File D001R002 was printed.

The Raster files, on tape one, meet the CALS MIL-R-28002A specification.

7. CGM Analysis

No Computer Graphics Metafile (CGM) files were included in this evaluation.

8. Conclusions and Recommendations

The physical structure of the first tape from OC-ALC/TILDOS meets the requirements defined in MIL-STD-1840A. The Document Declaration file on this tape had two reported errors and does not meet the requirements defined in MIL-STD-1840A.

The second tape was not a valid tape and contained no usable data. It does not meet the CALS MIL-STD-1840A requirements.

The Raster files, on tape one, meet the CALS MIL-R-28002A specification.

The tapes submitted by OC-ALC/TILDOS do not meet the CALS MIL-STD-1840A requirements.

9. Appendix A - Tapetool Report Logs

9.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information
ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange
ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Fri Jun 24 10:55:30 1994

MIL-STD-1840A File Catalog

File Set Directory: /cals/u1210/Set077

Page: 1

File Name	File Type	Record Format/ Length	Block Length/ Length/Total	Selected/ Extracted
D001	Document Declaration	D/00256	02048/000001	Extracted
*** NOTE (MIL-STD-1840A; 5.2.1.3) -	Unexpected maximum variable record size encountered. Header => 256, Expected => 260			
*** NOTE (ANSI X3.27; 8.5.2.6) -	Record Length for Recording Format Type D shall be the maximum length of a Measured Data Unit (MDU).			
*** NOTE (ANSI X3.27; 7.2.3) -	A variable length record shall be contained in an MDU. An MDU consists of a four byte Record Control Word (RCW) followed immediately by the variable record.			
*** NOTE (ANSI X3.4) -	A Record Control Word shall consist of four characters that express the sum of the lengths of the RCW and the variable record.			
D001R001	Raster	F/00128	02048/000037	Extracted
D001R002	Raster	F/00128	02048/000018	Extracted
D001R003	Raster	F/00128	02048/000018	Extracted
D001R004	Raster	F/00128	02048/000012	Extracted
D001R005	Raster	F/00128	02048/000007	Extracted

Catalog Process terminated with 0 error(s), 0 warning(s), and 4 note(s).

9.2 Tape Evaluation Log

CALS Test Network Tape Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Fri Jun 24 10:55:24 1994

ANSI Tape Import Log

Allocating tape drive /dev/rmt0...

/dev/rmt0 allocated.

VOL1ATTC01

3

Label Identifier: VOL1

Volume Identifier: ATTC01

Volume Accessibility:

Owner Identifier:

Label Standard Version: 3

*** NOTE (ANSI X3.27; 8.3.1.8) - The Label Standard Version should be 4 to
represent the current level of ANSI X3.27.

HDR1D001

00010001000100 94062 94062 000000

Label Identifier: HDR1

File Identifier: D001

File Set Identifier:

File Section Number: 0001

File Sequence Number: 0001

Generation Number: 0001

Generation Version Number: 00

Creation Date: 94062

Expiration Date: 94062

File Accessibility:

Block Count: 000000

Implementation Identifier:

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94-092

HDR2D0204800256

00

Label Identifier: HDR2
Recording Format: D
Block Length: 02048
Record Length: 00256
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 375 Bytes.

*** NOTE - Last block was incomplete. Short blocks are
pronounced to be interpreted as noise by some tape drives.
Tape Label => 2048, Actual => 375, Block Number => 1

Number of data blocks read = 1.

***** Tape Mark *****

EOF1D001 00010001000100 94062 94062 000001

<<<< PART OF LOG FILE REMOVED HERE >>>>

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

*** NOTE - Last block was incomplete. Short blocks are
pronounced to be interpreted as noise by some tape drives.
Tape Label => 2048, Actual => 768, Block Number => 37

Number of data blocks read = 37.

***** Tape Mark *****

EOF1D001R001 00010002000100 94062 94062 000037

<<<< PART OF LOG FILE REMOVED HERE >>>>

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

*** NOTE - Last block was incomplete. Short blocks are
pronounced to be interpreted as noise by some tape drives.
Tape Label => 2048, Actual => 896, Block Number => 18

Number of data blocks read = 18.

***** Tape Mark *****

EOF1D001R002 00010003000100 94062 94062 000018
<<<< PART OF LOG FILE REMOVED HERE >>>>

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

*** NOTE - Last block was incomplete. Short blocks are
pronounced to be interpreted as noise by some tape drives.
Tape Label => 2048, Actual => 256, Block Number => 18

Number of data blocks read = 18.

***** Tape Mark *****

EOF1D001R003 00010004000100 94062 94062 000018
<<<< PART OF LOG FILE REMOVED HERE >>>>

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

*** NOTE - Last block was incomplete. Short blocks are
pronounced to be interpreted as noise by some tape drives.
Tape Label => 2048, Actual => 1536, Block Number => 12

Number of data blocks read = 12.

***** Tape Mark *****

EOF1D001R004 00010005000100 94062 94062 000012

Label Identifier: EOF1
File Identifier: D001R004
File Set Identifier:
File Section Number: 0001
File Sequence Number: 0005
Generation Number: 0001
Generation Version Number: 00
Creation Date: 94062
Expiration Date: 94062
File Accessibility:
Block Count: 000012
Implementation Identifier:

EOF2F0204800128 00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

HDR1D001R005 00010006000100 94062 94062 000000

Label Identifier: HDR1
File Identifier: D001R005
File Set Identifier:
File Section Number: 0001
File Sequence Number: 0006
Generation Number: 0001
Generation Version Number: 00
Creation Date: 94062
Expiration Date: 94062
File Accessibility:
Block Count: 000000
Implementation Identifier:

HDR2F0204800128 00

Label Identifier: HDR2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

Actual Block Size Found = 2048 Bytes.

*** NOTE - Last block was incomplete. Short blocks are
pronounced to be interpreted as noise by some tape drives.
Tape Label => 2048, Actual => 1152, Block Number => 7

Number of data blocks read = 7.

***** Tape Mark *****

EOF1D001R005 00010006000100 94062 94062 000007

Label Identifier: EOF1
File Identifier: D001R005
File Set Identifier:
File Section Number: 0001
File Sequence Number: 0006
Generation Number: 0001
Generation Version Number: 00
Creation Date: 94062
Expiration Date: 94062
File Accessibility:
Block Count: 000007
Implementation Identifier:

EOF2F0204800128 00

Label Identifier: EOF2
Recording Format: F
Block Length: 02048
Record Length: 00128
Offset Length: 00

***** Tape Mark *****

***** Tape Mark *****

End of Volume ATTC01

End Of Tape File Set

Deallocating /dev/rmt0...

Tape Import Process terminated with 0 error(s), 0 warning(s),
and 7 note(s).

9.3 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (C)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Fri Jun 24 10:55:30 1994

MIL-STD-1840A File Set Evaluation Log

File Set: Set077

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: Boeing Test

srcdocid: MIL-STD-1840A Sample Raster Images

srcrelid: NONE

chglvl: NONE

*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid change level encountered.

*** NOTE (MIL-STD-1840A; 5.1.1.2) - Change level should be the word ORIGINAL or a Revision Number followed by a Change Level Number followed by a Change Level Date. They should be separated by a comma or space.

dteisu: NONE

*** ERROR (MIL-STD-1840A; 5.1.1.2) - Invalid date format encountered.

*** NOTE (MIL-STD-1840A; 5.1.1.2) - Date Format shall be a four digit year followed by a two digit month followed by a two digit day.

dstsys: EDCARS

dstdocid: MIL-STD-1840A Sample Raster Images

dstrelid: NONE

dtetrn: 19940120

dlvacc: NONE

filcnt: R5

ttlcls: Unclassified

doccls: Unclassified

doctyp: Unclassified

docttl: Auto-trol conversion to CALS group 4

2 error(s), 0 warning(s), and 2 note(s) were encountered
in Document Declaration File D001.

Found file: D001R001

Extracting Raster Header Records...

Evaluating Raster Header Records...

```
srcdocid: DL123456789      99999AA          FL  00010001UMFEHN
dstdocid: 123456789
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: U
rtype: 1
rorient: 000,270
rpelcnt: 010188,007366
rdensity: 0300
notes: Auto-trol conversion to CCITT Group 4
```

Saving Raster Header File: D001R001_HDR
Saving Raster Data File: D001R001_GR4

Found file: D001R002
Extracting Raster Header Records...
Evaluating Raster Header Records...

```
srcdocid: DL223456789      99999AA          FL  00010001UMFEHN
dstdocid: 223456789
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: Unclassified
rtype: 1
rorient: 000,270
rpelcnt: 003103,002364
rdensity: 0300
notes: Auto-trol conversion to CCITT Group 4
```

Saving Raster Header File: D001R002_HDR
Saving Raster Data File: D001R002_GR4

Found file: D001R003
Extracting Raster Header Records...
Evaluating Raster Header Records...

```
srcdocid: DL323456789      99999AA          FL  00010001UMFEHN
dstdocid: 323456789
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: Unclassified
rtype: 1
rorient: 000,270
rpelcnt: 003077,002318
rdensity: 0300
```

notes: Auto-trol conversion to CCITT Group 4

Saving Raster Header File: D001R003_HDR
Saving Raster Data File: D001R003_GR4

Found file: D001R004
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: DL423456789	99999AA	FL 00010001UMFEHN
dstdocid: 423456789		
txtfilid: NONE		
figid: NONE		
srcgph: NONE		
doccls: Unclassified		
rtype: 1		
rorient: 000,270		
rpelcnt: 003074,002311		
rdensity: 0300		

notes: Auto-trol conversion to CCITT Group 4

Saving Raster Header File: D001R004_HDR
Saving Raster Data File: D001R004_GR4

Found file: D001R005
Extracting Raster Header Records...
Evaluating Raster Header Records...

srcdocid: DL523456789	99999AA	FL 00010001UMFEHN
dstdocid: 523456789		
txtfilid: NONE		
figid: NONE		
srcgph: NONE		
doccls: Unclassified		
rtype: 1		
rorient: 000,270		
rpelcnt: 003053,002307		
rdensity: 0300		

notes: Auto-trol conversion to CCITT Group 4

Saving Raster Header File: D001R005_HDR
Saving Raster Data File: D001R005_GR4

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...

No errors were encountered during file count verification.
File Count verification complete.

A total of 2 error(s), 0 warning(s), and 2 note(s) were
encountered in Document D001.

A grand total of 2 error(s), 0 warning(s), and 2 note(s) were
encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

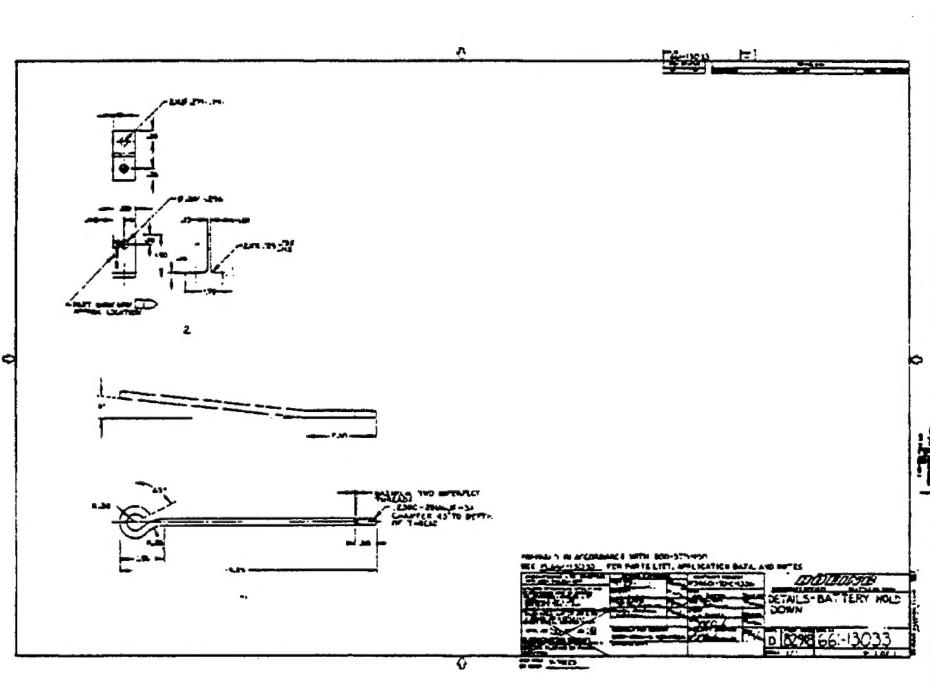
9.4 Other Tape Reading Logs

```
/cals/caps/Bin/read1840A: --- Read declaration file 'D001      ' ---  
/cals/caps/Bin/read1840A: writing data file  
'aftb9492/MIL-STD-1840ASam/MIL-STD-1840ASam1.R.cci'.  
/cals/caps/Bin/read1840A: writing data file  
'aftb9492/MIL-STD-1840ASam/MIL-STD-1840ASam2.R.cci'.  
/cals/caps/Bin/read1840A: writing data file  
'aftb9492/MIL-STD-1840ASam/MIL-STD-1840ASam3.R.cci'.  
/cals/caps/Bin/read1840A: writing data file  
'aftb9492/MIL-STD-1840ASam/MIL-STD-1840ASam4.R.cci'.  
/cals/caps/Bin/read1840A: writing data file  
'aftb9492/MIL-STD-1840ASam/MIL-STD-1840ASam5.R.cci'.  
-- declaration file indicates 0 files of type T  
-- declaration file indicates 0 files of type G  
-- declaration file indicates 0 files of type H  
-- declaration file indicates 0 files of type Q  
-- declaration file indicates 5 files of type R  
-- declaration file indicates 0 files of type C  
-- declaration file indicates 0 files of type X  
-- declaration file indicates 0 files of type P  
-- declaration file indicates 0 files of type Z
```

10. Appendix B - Detailed Raster Analysis

10.1 File D001R001

10.1.1 Output HiJaak Pro



10.2 File D001R002

10.2.1 Output RxHighlight

MODEL C-135		CORPORATE OFFICES SEATTLE, WASHINGTON 98124		CAGE CODE 82918	REV. DATE 93-04-21	PL 661-13033	REV. LTR.
PARTS LIST	BOEING		LIST DETAILS - BATTERY HOLD DOWN	GROUP AVIONICS	CONTRACT NUMBER F34601-90-C-1336	SH 1 OF SH 4	
APPLICATION LIST							
PART NO.	NEXT ASSEMBLY	MODEL	SERIAL NUMBER	REV SYM			
-1	661-13031	C-135	-	DRAWING PICTURE SHEET 1			
-2	661-13024	C-135	-	DRAWING PICTURE SHEET 1			
REVISIONS							
REV SYM	DESCRIPTION OF CHANGE			DATE	CLASS	CHG CONTROL NUMBER	
-	NEW DRAWING - WBS 110GA ITEM 119. CHANGE EFF - C-135 (EO600) KFO01-KFO50. DESIGN GROUP - J. HOWELL 526-4490. MFG ENG - K. PARKER R4PP 93/03/29. QUANLITY ASSURANCE - V. ANDREW 93/04/06			4-21-93		EA93-135A1-16	
ASSEMBLY BREAKDOWN LIST							
QTY REOD	PART OR IDENTIFYING NUMBER	NOMENCLATURE OR DESCRIPTION	NOTE NOTES CODE	REV SYM			
-	-1	RETAINING ROD	- ND FIN F-8.07 STOCK .25 DIA X (11.0) 15-SPH ROD PER AMS5659 SOLUTION HEAT TREATED HT TR 150-170 KSI PER MIL-H-6875 (BAC5619 MANDATORY FOR BOEING AND ITS SUBCONTRACTORS)				
-	-2	SUPPORT TEE	- ND FIN F-12.37 STOCK 1.00 (1.6X1.8) BAC1527-64 EXTRUSION. 15-SPH PER AMS5659 DR 1.00 INCH THICK 15-SPH BAR STOCK PER AMS6659 HT TR 150-170 KSI PER MIL-H-6875 (BAC5619 MANDATORY FOR BOEING AND ITS SUBCONTRACTORS)				
-	D2-5000 - MILSTD130 - 661-10004 - BAC5300	PROCESS DOC MIL STD SUBSTITUTION DWG PROCESS SPEC	- VN MIL-STD-130				
ASSY LIST (CONTINUED ON NEXT PAGE)							